

Cell Biology

BS4400

Summer 2018

Mon/Tues/Wed/Thursday 9:00 a.m – 11:30 am

Instructor: Shilpi Paul, Ph.D.

Email: pauls@oldwestbury.edu

Office Hours: M/W 12:00-1:00PM or By Appointment

Office: NSB S207

Phone: 516-876-5614

Course Textbook: Required

Molecular Biology of the Cell. Alberts, et al. 6th edition, Garland Sciences

Course Description:

This course is designed as an introduction to modern cell biology. Cell biology is one of the fastest growing fields in all of biology, and the study of the meeting point of biochemistry, genetics, cytology and physiology is vital to anyone with an interest in molecular biology. A cell biologist must not only be able to examine structures within a cell, but must understand the underlying molecular processes that govern the formation and regulation of those structures, as well as the interaction of those structures with each other and the environment both within and without the cell. While a single semester is far from sufficient time to cover all aspects of such a broad and rapidly changing field, my aim is to provide an informational foundation for the major aspects of cell biology.

Course Objectives:

In completing this course, students will:

- Understand the molecular activities of the cell, emphasizing:
 - Cytoskeleton
 - Membranes
 - Signaling
 - Nuclear activity
 - Cell Division
- Understand how these systems interact to produce a functioning cell that can exist in a multicellular environment
- Gain insight into modern cell biology research techniques
- Understand how these techniques use biochemical, cytological and genetic approaches to untangle complex molecular pathways
- Be able to design an experimental plan to test novel hypothetical situations and make predictions for those experiments

COURSE FORMAT:

The lecture component of this course **meets four times a week and counts for 70% of your grade.** The format will be a **combination of didactic lecture and small group work and discussion often followed by a quiz on the topic taught.** It is imperative that you read the assigned materials before coming to class, in order to achieve the maximal benefit of the classroom discussions and activities. In addition, we will spend a substantial amount of time learning how to read and interpret primary literature in the field of cell biology.

The **laboratory portion of the course will meet twice per week** and will primarily be spent performing laboratory exercises, in order to gain some hands on experience with the methods used in cell biology. Your **assessment will be based on quizzes, assignments, your notebook and small group presentations.** **Three absences in lab will result in failing the course.**

What you get out of the course depends in large part on you and what you put into the course. I am here to present the material and help you learn, but you are responsible for doing the assignments, reading and studying the material necessary to pass the course and obtain a satisfying grade.

Classroom Etiquette Policy: In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be silenced in class sessions.

All cell phones MUST be on silence mode during class; NO TEXTING

ASSESSMENT:

1) Lecture grade 70% of final grade: Total 500

Examinations (300 points): 60% of lecture grade

There will be **3 exams throughout the semester (including the final)** and each will have a value of 100 points. The exams will be based on the class discussions, homework assignments, and textbook readings and therefore it is imperative that you participate during all class activities in order to fully prepare for the exams.

Missing/Make-up Exams

NO MAKE-UP EXAMS, only extenuating circumstances are acceptable for missing a class exam and cases will be handled on an individual basis. You must contact me in writing (email is OK) within 24hrs and only serious mitigating circumstances will be accepted. The exam has to be made up.

Missing an exam without explanation will result in a grade of 0% for that exam.

In-class presentation (50 points): 10% of lecture grade

You will be presenting in small groups of 4 or 5 on a 'directed' topic of your choice ('Presentation Guide and Instructions' will be provided in Blackboard).

In-class quiz and assignments (125 points): 25% of lecture

Quiz will be based on the lecture taught and discussed, therefore it is imperative that you listen and follow each lecture. **LOWEST GRADE WILL BE DROPPED.** Timely completion of homework

assignment is important.

Attendance/Participation (25 points): 5% lecture grade

Your class participation will be based on your attendance, class participation and punctuality. **LATE in class will be marked as absent. Use of your cell phone during class (surfing the internet, texting, or talking) will result in a '0' for the day AND if you are being disruptive, you will be asked to leave.**

2) Laboratory Grade (30% of final grade) Total 500

Notebook (175 points) Your laboratory notebook will be collected at the end of the semester for grading. Each lab must have a:

- **Lab title** with **date** when the lab is performed
- **Purpose** or Goal of the lab
- **Procedure** (Brief just as points or cut -paste the protocol from the handout)
- **Results and Analysis** (with all **images properly labeled and explained** as figure legend)
- **Discussion**- explaining what the result means and how it helps in understanding the biological phenomenon. Here any technical, manual errors can be discussed.
- Often there will be some **questions associated** with the lab to include with the discussion. Labs must be contiguous (pages must be in order, no skipping pages, adding extra pages without consent of instructor) in order to receive full credit.

Quizzes (150) : THERE WILL BE THREE TO FOUR QUIZES.

Lab Report & Presentation 150 Self-Explanatory, details as well as grading rubrics will be provided in advance of each assignment.

Attendance and Participation (25 points)

Attendance

If you miss a lab, you will receive a 0 on all associated materials (quizzes and in class assignments). **If you miss 3 labs, you will FAIL the course.** THIS IS IMPORTANT, so be sure not to miss 3 labs.

To receive full grading **proper participation** in the lab is IMPORTANT. Majority of the lab, student will be working in groups. **Active participation of each member** in the group is required to receive full grading for that particular Laboratory. **ARRIVING 15 MINUTES LATE IN CLASS will be marked as absence for that particular lab.**

3) You must achieve a **passing grade in both the lab and the lecture** in order to pass the class, **failure in either portion will result in an F for the course.** Student receiving **C- will be given C** only if the student receives **passing grade (60 and above) in the exams.**

Grading Scale: For all exams, quizzes, assignments, and final grade:

A- to A	= 90-100%
B- to B+	= 80-89%
C- to C+	= 70-79%
D- to D+	= 60-69%
F	= below 60%

Withdrawing from the course:

It is up to you to do the required paperwork should you decide to withdraw from this course. **Failure to withdraw officially from this course will result in grades of 0% for all missed quizzes and exams.** The last day to withdraw from the course this semester is ... Withdrawal after this date is possible only in cases with **documented** mitigating circumstances and approval by your instructor.

SUNY AT OLD WESTBURY POLICY ON ACADEMIC INTEGRITY

Administered by the Office of Academic Affairs

As is the policy of all SUNY institutions, students are expected to maintain the highest standards of honesty in their college work. Any act which attempts to misrepresent to an instructor or College official the academic work of the student or another student, or an act that is intended to alter any record of a student's academic performance by unauthorized means, constitutes academic dishonesty. Cheating, forgery and plagiarism are considered serious offenses and are subject to disciplinary action.

Cheating

Cheating is defined as giving or obtaining information by improper means in meeting any academic requirements. Examples of cheating, although not inclusive, include: unauthorized giving or receiving of information for an examination, paper, laboratory procedure, or computer assignment (file or printout); taking an examination for another student or allowing another student to take an examination for you; altering or attempting to alter a grade either on graded work or in an instructor's records or on any College form or record.

Forgery

Forgery is defined as the alteration of college forms, documents, records, or the signing of such forms or documents by someone other than the proper authority.

Plagiarism

Plagiarism is defined as the use of material from another author whether intentional or unintentional, without referencing or identifying the source of the material. If students have any questions as to what constitutes plagiarism, it is their responsibility to get clarification by consulting with the appropriate instructor.

ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS: (OSSD):

If you have or suspect you may have a physical, psychological, medical or learning disability that may impact your course work, please contact: Stacey DeFelice, Director, email: defelices@oldwestbury.edu for the Office of Services for Students with Disabilities, NAB 2065. Phone: 516-628-5666, Fax (516) 876-3005, TTD: (516) 876-3083. The Administrative Assistant is: Malini Kumar, email:kumarm@oldwestbury.edu. The office will help you determine if you qualify for accommodations and assist you with the process of accessing them. All support services are free and all contacts with the OSSD are strictly confidential. SUNY/Old Westbury is committed to assuring that all students have equal access to all learning activities and to social activities on campus.

**BS4400-Cell Biology
Lecture Schedule of Classes NSB**

	Date	Topic	Chapter
1	05/29T	Proteins	Chapter 3
2	05/30W	Chromosome	Chapter 4,
3	05/31Th	Genome to Protein	Chapter 6
4	06/04M	Short presentation- Ch 4 Control of Gene Expression	Chapter 7
5	06/05T	Control of Gene Expression contd Research Article discussion	Chapter 7 (Research Article will be provided)
6	06/06W	Introduction of membrane structure Quiz1	Ch10
7	06/07Th	Exam 1	Ch 3, 4, 6, 7
8	06/11M	Membrane transport	Ch 11
9	06/12T	Cell Signaling	Ch 15
10	06/13W	The Cell cycle QUIZ 2 Research article discussion	Ch 17
11	06/14Th	Exam 2	Ch 17
12	06/18M	Cell Death	Ch 18
13	06/19T	Cell junction	Ch19
14	06/20W	Development of Multicellular Organisms	Ch21
15	06/21Th	Development of Multicellular Organisms Quiz3	Ch21
16	06/25M	Stem Cells and Tissue Renewal	Ch22
17	06/26T	Presentation Group 1	
18	06/27W	Presentation Group 2	
19	06/28Th	Exam3	(Based on Ch 17, 18, 21, 22)

**SUNY COLLEGE AT OLD WESTBURY
BIOLOGICAL SCIENCES**

BS4400 – Cell Biology

**Mon/Wednesday 1: 00-4:30 Lab Schedule
Summer 2018**

Instructor: Shilpi Paul, Ph.D.

Email: pauls@oldwestbury.edu

Office Hours: M/W 12 -1:00PM

Requirement: Bring in a hard bound notebook

ALL LAB HANDOUTS WILL BE PROVIDED

OBJECTIVES

Course Objectives:

- Understand the different concepts of microscopy, including the use of epifluorescence and light microscopy
- Understand the different approaches to study at the subcellular level
- Learn handling *mammalian cell cultures*, *C. elegans* by using immunocytochemistry and immunoblotting study subcellular protein distribution.
- Understand the use of antibodies to identify protein distribution in fixed mammalian tissue
- Explore how synthetic biology works
- Be able to read and interpret scientific literature as it relates to cell biology
- Use quantitative reasoning to explain scientific phenomena.
- Be able to design an experimental plan, test hypothesis and make conclusion- finally able to write in the form of a research article.

Attendance

If you miss a lab, you will receive a 0 on all associated materials (notebook, quizzes and assignments). **If you miss 3 labs, you will fail the course.**

Grading Scale:

For all exams, quizzes, assignments, and final grade:

- A- to A = 90-100%
- B- to B+ = 80-89%
- C- to C+ = 70-79%
- D- to D+ = 60-69%
- F = below 60%

WRITING HELP:

Revised effective 5/20/08

Visit the Writing Center for help brainstorming or organizing your ideas or for feedback on a draft. You can make an appointment online at <https://oldwestbury.mywconline.com> or stop by the Writing Center located in room L-242 on the main floor of the Library in Campus Center. Hours: Mondays and Tuesdays, 11am-9:30pm and Wednesdays and Thursdays, 10am-7pm. Phone: [\(516\) 876-3093](tel:5168763093).

BS4400 – Cell Biology
Mon/Wednesday
1: 00-4:30 Lab Schedule

Date	Lab Topic	HANDOUT
05/30W	1.Isolating of Chromosomal protein Day 1- IND 25 2.RNAi day 1	1.IND 25 2. Carolina – Inducing RNAi using C.elegans as model
06/04M	1. Isolating of Chromosomal protein Day 2- Data analysis- IND25 2.RNAi day2 2.Chromatin isolation plant nuclease digestion- Day 1 – Expt.306	Expt 306
06/06W	1.RNAi day 3 2.Expt 306 day 2 3. Immunohistochemistry Day 1	Immunohistochemistry handout Lab Exam 1
06/11M	1. RNAi day 4 2. Immunohistochemistry- Day 2 -Microscopy 3. Mammalian cell culture –Day 1	Cell culture handout
06/13W	1.RNAi Day5 2. Analysis of a Cell-Surface Receptor 3. Mammalian cell culture- Day 2 Apoptosis	Modern Bio 702 Lab Exam 2
06/18M	Affinity Chromatography Day 1 RNAi contd	Edvotek 277
06/20W	Affinity Chromatography Day 2 RNAi last lab	Lab Exam 3
06/25M	ELISA	(Bio-Rad 166-2400)
06/27W	Presentation Lab notebook submission	Lab Exam 4